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AF/1771

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Yasuo IWASA, et al.

Docket No: Q63961

Appln. No.: 09/841,486

Group Art Unit: 1771

Confirmation No.: 4521

Examiner: Hai VO

Filed: April 25, 2001

For: POROUS RESIN FILM AND INK JET RECORDING MEDIUM

SUBMISSION OF APPELLANT'S BRIEF ON APPEAL

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an original and two copies of Appellant's Brief on Appeal. A check for the statutory fee of $330.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

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WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: February 23, 2004 (February 21, 2004, being a Saturday)

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For: POROUS RESIN FILM AND INK JET RECORDING MEDIUM

APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 1.192, Appellant submits the following:

I. REAL PARTY IN INTEREST

The real party in interest is Yupo Corporation of Ibaraki Japan.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative, and the Assignees of this application are not aware of any other appeals or interferences which will directly affect or be affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 7 and 12 are canceled. This is an appeal from the Examiner's rejection of claims 1-7, 9-11 and 13-19.

IV. STATUS OF AMENDMENTS

The Amendment under 37 C.F.R. § 1.116, filed on August 21, 2003, is entered for purposes of appeal as indicated in the Advisory Action mailed on November 20, 2003.

V. SUMMARY OF THE INVENTION

The present invention relates to a porous resin film having excellent aqueous liquid or ink absorptivity and to a recording medium comprising the porous resin film, particularly an ink jet recording medium. Specification, page 1, lines 4-7.

There has been an increasing demand for synthetic papers suited for printing with aqueous inks and application of environmentally friendly aqueous pastes, that is, synthetic papers exhibiting satisfactory absorbing properties for aqueous ink, aqueous pastes or water as a medium thereof. Specification, page 1, lines 13-17.

Ink jet printers have become widespread in both business and domestic use. Ink jet printers have the advantages of adaptability for multicolor printing, capability of forming large images and low printing costs. Further, ink jet printers have taken the place of those using oily ink in view of environmental and safety concerns. Ink jet printers have also found wide use for obtaining hard copies from word processors as well as image processors. Therefore, it has been required for printed images to be more precise. Page 1, line 18 to page 2, line 3.

Image precision depends on the drying properties of the ink applied to the recording media. For example if multiple sheets are printed and superposed on top of each other in succession, the printed ink may cause offset to stain if the recording sheets have insufficient ink absorptivity. Specification, page 2, lines 2-8. To improve image precision, it is a common practice to coat a recording medium such as synthetic paper, plastic film or pulp paper, with an ink receptive material containing a hydrophilic resin or inorganic fine powder. It has also been proposed to provide ink jet recording media with an ink receptive layer mainly comprising a synthetic resin with thermal lamination or extrusion lamination. Specification, page 2, lines 17. However, pulp paper coated with an ink receptive layer is liable to develop unevenness on the printed surface where a large amount of ink is ejected. Because plastic films tend to have inadequate absorptivity when a large amount of ink is ejected, the coating must have an increases thickness, requiring a number of coating operations. Page 2, lines 17-23.

Accordingly, it is an object of the present invention to provide a porous film having satisfactory absorptivity for water as a solvent for an aqueous ink or an aqueous paste. Another object of the present invention is to provide a recording medium, especially for ink jet printing, which uniformly absorbs aqueous ink without causing ink density unevenness even when solid areas are printed with a large amount of ejected ink. Page 2, line 24 to page 3, line 6.

After extensive investigation, the present inventors have found that a porous resin film that is obtained from a compound which is prepared by kneading a thermoplastic resin comprising a water-soluble or water-swelling hydrophilic thermoplastic resin and, if desired, an inorganic and/or an organic fine powder at a shear rate of at least 300 sec^{-1} or a laminate having

the porous resin film as a surface layer exhibits satisfactory absorptivity for an aqueous liquid. They have also found that a porous resin film having a liquid absorbing capacity of 0.5 ml/m^2 or more as measured in accordance with the method specified in Japan TAPPI Standard No. 51-87 is capable of absorbing ink without causing ink density unevenness even when a large amount of ink is ejected and is therefore suitable as an ink jet recording medium. Page 3, lines 8-23.

The present invention provides a stretched porous resin film which is obtained from a compound prepared by kneading a composition consisting essentially of 30 to 100% by weight of a thermoplastic resin comprising 5 to 100 parts by weight of a hydrophilic thermoplastic resin per 100 parts by weight of a non-hydrophilic thermoplastic resin and 0 to 70% by weight of an inorganic and/or an organic fine powder in an intermeshing twin-screw extruder at a screw shear rate of 300 sec^{-1} or higher and which has a liquid absorbing capacity of 0.5 ml/m^2 or more as measured in accordance with the method specified in Japan TAPPI Standard No. 51-87. Claim 1.

The present invention also provides a laminate comprising a base layer having on at least one side thereof the above-described stretched porous resin film as a printable surface layer. The present invention furthermore encompasses a liquid absorber and a recording medium comprising the stretched porous resin film or the laminate, particularly a recording medium for ink jet recording comprising the porous resin film or the laminate and a colorant fixing layer. Specification, page 4, lines 7-14.

The stretched porous resin film of the present invention exhibits high absorptivity for an aqueous solvent or aqueous ink. The recording medium comprising the stretched porous resin

film of the invention forms precise images free from ink density unevenness even when printed with a large amount of ink ejected from an ink jet. Accordingly, the stretched porous resin film and the recording medium of the invention are suited to a wide variety of applications including ink jet recording media. Specification, page 4, lines 15-22.

VI. ISSUES

1. Whether the rejection of claims 1-7, 9 and 13-19 under 35 U.S.C. § 102(b) over Suzuki et al should be reversed.

2. Whether the Examiner has made a *prima facie* showing of obviousness of claims 10 and 11 under 35 U.S.C. § 103(a).

VII. GROUPING OF CLAIMS

The claims stand or fall together.

VIII. ARGUMENTS

I. Response to Claim Rejections Under 35 U.S.C. § 102

Claims 1-6, 8 and 13-19[1] were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Suzuki et al for the reasons of record. Specifically, it is the Examiner's position that Suzuki et al uses the same kneading process and the same composition to form the porous film disclosed therein, wherein the amount of the hydrophilic thermoplastic resin employed overlaps the claimed range. The Examiner asserts that the contact angle with water is related to

[1] Claim 7 was canceled in the Amendment filed August 21, 2003.

the amount of the hydrophilic thermoplastic resin and therefore it is the Examiner's position that the claimed contact angle with the water of the porous sheet is an inherent property. The Examiner further asserts that porosity dictates the void distribution and the sheet of Suzuki et al meets the porosity requirement of the claims, and therefore the number of pores per m^2 on the surface is an inherent property.

In regard to the claimed liquid absorbing capacity of the film, it is the Examiner's position that since there is no evidence that the film of Suzuki et al cannot achieve a liquid absorbing capacity within the range set forth in the claims, and the porous film of Suzuki et al meets the recited structural limitations of the claimed invention, the claimed liquid absorbing capacity is an inherent property of the film of Suzuki et al. Further, the Examiner states that products of identical composition can not have mutually exclusive properties. See Response to Arguments on page 4 of the Office Action dated March 21, 2003.

The Examiner further asserts that Suzuki et al discloses the foam product comprising a thermoplastic resin and a powder of hydrophilic resin in an amount of 30 to 250 parts by weight per 100 parts by weight of the thermoplastic resin. The Examiner further takes the position that the extruded sheet is stretched based upon the disclosure at col. 10, lines 22-24.

Applicants respectfully submit that Suzuki et al does not disclose all elements of the claimed invention implicitly or inherently, and therefore the rejection under 35 U.S.C. § 102(b) is improper. Specifically, Suzuki et al does not disclose: (1) a stretched porous resin film made from (2) a composition consisting essentially of 30 to 100% by weight of a thermoplastic resin, 0 to 70 % by weight of at least one of an inorganic fine powder and an organic fine powder,

wherein the thermoplastic resin comprises (a) 5 to 100 parts by weight of a hydrophilic thermoplastic resin (b) per 100 parts by weight of a non-hydrophilic thermoplastic resin; (3) a liquid absorbing capacity of 0.54 ml/m^2 or more as measured in accordance with the method specified in Japan TAPPI Standard No. 51-87. Further, Suzuki et al does not disclose the process elements of kneading the composition in an intermeshing twin extruder at a shear rate of 300 sec^{-1} or higher, which contributes structural and physical differences of the claimed invention in comparison to the prior art.

The present invention is directed to a stretched porous resin film which is obtained by kneading a composition consisting essentially of: (1) 30 to 100% by weight of a thermoplastic resin that comprises 5 to 100 parts by weight of a hydrophilic thermoplastic resin per 100 parts by weight of a non-hydrophilic thermoplastic resin; and (2) 0 to 70% by weight of at least one of an inorganic fine powder and an organic fine powder in an intermeshing twin extruder at a shear rate of 300 sec^{-1} or higher and which has a liquid absorbing capacity of 0.5 ml/m^2 or more as measured in accordance with the method specified in Japan TAPPI Standard No. 51-87.

Suzuki et al differs from the presently claimed stretched porous resin film in composition, form and the method for obtaining the film. Suzuki et al relates to production of resin foam by an aqueous medium, that is, a method of producing resin foam by foaming water in a resin by using the aqueous medium.

On the contrary, the present invention relates to the porous resin film prepared by kneading the thermoplastic resin comprising a hydrophilic resin under particular production conditions and then stretching. In comparison with the present invention, Suzuki et al has an

essential component the use of an aqueous medium, but the present invention does not use an aqueous medium. In Suzuki et al, the aqueous medium is described as follows: "Water is generally used as a aqueous medium, but a surface active agent, a water-soluble polymer, a polyhydric alcohol, a water-miscible organic solvent, etc. may be added as required in order to adjust the boiling point or vapor pressure of the medium, increase the affinity of the aqueous medium for the porous agglomerated particles, improve the dispersion stability of the aqueous medium during the melt-kneading of the resin compound, or to increase the uniformity of the cells of the resulting foam." Thus, in Suzuki et al, the aqueous medium is used for producing a foamed resin by evaporating moisture in the aqueous medium inside the resin during kneading. The polyhydric alcohol is exemplified as an additive of the aqueous medium, which is added for improving the dispersion stability of the aqueous medium during the melt-kneading of the resin compound.

On the contrary, in the present invention, the hydrophilic resin is more greatly dispersed in the thermoplastic resin by kneading the thermoplastic resin comprising the hydrophilic resin at a screw shear rate of 300 sec. -1 or higher . As a result, a desirable liquid absorbing capacity is obtained. Specification, page 5, lines 1-8. This process is different from the process of Suzuki et al in that the present invention does not use an aqueous medium as in Suzuki et al.

When the resin composition contains moisture in an amount of 400 ppm or more during kneading, roughness is observed in the surface and inside of the resulting sheet and film. Thus, the commercial value of the product is lost due to bad appearance or it becomes impossible to stretch it. Further, when using fine inorganic particles such as calcium carbonate, drying in

advance is carried out since the fine inorganic particles and the hydrophilic resin easily absorb moisture. Thus, as matter of course, the person skilled in the art uses fine inorganic particles and the hydrophilic resin after sufficient drying, before kneading. As a matter of course, in Examples of the present specification, the fine inorganic particles and the hydrophilic resin were dried in an oven in advance to control the content of moisture to less than 400 ppm.

The Examiner refers to Example 2 of Suzuki et al and asserts that Suzuki et al has the same composition and is obtained by the same kneading process. However, Example 2 merely discloses the use of 10,000 g of polyethylene as a thermoplastic resin. Example 2 uses 60 g of a polyethylene glycol as a surfactant for improving a wetting property of the surface of the fine hydrophilic solid powder: calcium carbonate (column 2, line 66-column 3, line 12). The amount is different from that of the present invention as recited in amended claim 1, wherein the thermoplastic resin comprises 5 to 100 parts by weight of a hydrophilic thermoplastic resin per 100 parts by weight of a non-hydrophilic thermoplastic resin. When the amount of the hydrophilic resin is less than 5 parts by weight, due to the insufficient amount of the resin, the hydrophilic effect is lacking in uniformity and print quality (ink absorbance, uneven density and blurring) deteriorates, and the difference between the maximum value and the minimum value of the contact angle with water becomes 30° or more. When the amount of the hydrophilic resin is more than 100 parts by weight, clinging of film to a roll during molding and deterioration of stretching properties can be observed.

With respect to the kneading process, the Examples of Suzuki et al disclose only the following: 1) mixing the resins with a mixer to form a resin compound, 2) mixing the resin

compound adding an aqueous medium such as a tap water, 3) producing a foamed sheet by extruding the resin compound impregnated with the aqueous medium from a circular die of a 70mm extruder (Example 1), or from a T-die of a 50mm extruder (Example 2), or similar method (the other Examples). There is no disclosure in Suzuki et al of kneading in an intermeshing twinscrew extruder at a screw shear rate of 300 sec^{-1} or higher, and therefore it cannot be said that Suzuki et al discloses the same kneading process. This is an essential feature of the process for obtaining the claimed stretched porous resin film of the present invention having the recited liquid absorption capacity. As disclosed in the present specification, if the screw shear rate is less than 300 sec^{-1}, the hydrophilic thermoplastic resin will not be sufficiently dispersed, which results in poor liquid absorptivity. Page 5, lines 1-8. Thus, since the composition and the method for obtaining the film of Suzuki et al is not the same as in the presently claimed invention, it cannot be said that the recited liquid absorption property is an inherent property.

With respect to the composition of the thermoplastic resin recited in claim 1, Applicants respectfully submit that the Examiner has misinterpreted the reference. The Examiner states that "Suzuki et al discloses the foam product comprising a thermoplastic resin and a powder of hydrophilic resin in an amount of 30 to 250 parts by weight per 100 parts by weight of the thermoplastic resin (column 2, line 62 to 63, column 5, line 29 to 30)". However, Suzuki et al refers to the hydrophilic solid powder, and not a hydrophilic resin as in the present invention, since the hydrophilic solid powder of Suzuki et al, as described on column 2, line 51 to 53, does not substantially melt at the melting temperature of the resin particles. As the Examiner states on page 4, line 11 to 13 of the Office Action, (urea resins), melamine resins and phenolic resins are

exemplified as hydrophilic solid powder in Suzuki et al (column 2, line 62 to 63). These resins are substances that do not substantially melt at the melting temperature of the kneaded thermoplastic resin, based on the above-mentioned definition. On the contrary, the hydrophilic resin in the present invention is kneaded in an intermeshing twinscrew extruder at a screw shear rate of 300 sec^{-1} or higher. Therefore it is apparent that the Examiner's statement is a misunderstanding of the disclosure.

Further, another difference between the claimed invention and Suzuki et al is that the porous resin film of the claimed invention is stretched. The Examiner states on page 2, line 2 to 1 from the bottom of Office Action that the extruded sheet is "stretching" in Suzuki et al, citing Example 2, column 10, lines 22 to 24. Applicants have advised that the corresponding description in the basic Japanese Patent Application of Suzuki et al states that: "the extruded sheet was rapidly cooled with air knives, and was taken over by stretching". Thus, the extruded sheet is not stretching. As for the reason the resin foam obtained in Example 2 has an expansion ratio of 16 (see col. 10, line 30) this resin foam consists of the resin compound and air, and the volume ratio of the resin compound to air (the resin compound / air) is 1/15, therefore, this resin foam has many cells of the resulting foam, and cannot be stretched at all. The expansion ratios in the other Examples of Suzuki et al, that is, Examples 1, 3, 4 and 5 are 9.8, 7.5, 10.5 and 12.5, respectively. The resin foams in the other Examples also have many cells of the resulting foam, and cannot be stretched at all. When these resin foams are stretched, they are broken down. Accordingly, the stretched film of the present invention is different from the resin foam of Suzuki et al.

In support of the above, Applicants submitted Attachment A with the Amendment filed on August 21, 2002 of photo micrographs showing cross-sectional photographs of a foam sheet having an expansion ration of 3.8 and a foam sheet of the claimed invention. The upper micrograph is a cross-sectional photograph by light microscope of a foam sheet manufactured by the inventors of the present application. In the upper micrograph, the circular portions and oval portions correspond to air layers (foam layers) and the portions other than the air layers correspond to resin layers. In general, the foam sheet shown in the micrograph is obtained by the following: the generated gas (water vapor in the cited reference) is cooped-up in a melting resin within an extruder, and at the moment that the resin is extruded from the extruder via a die, the cooped-up gas is freed from the pressure within the extruder to expand (foam) within the resin. Unless the resin in the foam sheet is cooled and solidified immediately after being extruded from the extruder, the foaming air does not become a cell, as shown in the micrograph. Thus, it is readily apparent that it is difficult to stretch the foam sheet in the micrograph by five times in a longitudinal direction and eight times in a transverse direction (5 X 8 = 40 times as a dimension magnification). The foam sheet set forth in the upper micrograph has an expansion ratio of 3.8. A foam sheet as disclosed by Suzuki et al having an expansion ratio of 7.5 to 16 has a greater number of air layers than that of the foam sheet shown in the upper micrograph having an expansion ratio of 3.8, and therefore it is expected that it is more difficult to stretch a foam sheet as disclosed by Suzuki et al. Additionally, Applicants conducted an experiment to stretch a foam sheet having an expansion ratio of 16, and as a result, it was difficult to obtain a sample to observe a cross-section thereof, because there are too many layers in the foam sheet.

For reference, the lower micrograph shows a cross-sectional photograph of the claimed invention by electron microscope. It is observed that voids having $CACO_3$ nucleus (shown by the arrowhead in the micrograph) are formed. In the claimed invention, the sheet which is extruded with an extruder, does not have the voids and is a mixture of $CACO_3$ and a resin. The voids having $CACO_3$ nucleus are formed only after the obtained sheet is stretched in longitudinal and transverse directions.

Thus, Suzuki et al does not disclose all elements of the claimed invention and the rejection under 35 U.S.C. § 102(b) is improper.

Accordingly, Applicants respectfully request reversal of the rejection.

II. Response to Claim Rejections Under 35 U.S.C. § 103

Claim 10 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Suzuki et al and further in view of Arai et al (US '118).

The Examiner states that Suzuki et al teaches that the hydrophilic powder can be a melamine resin or a phenolic resin, but does not specifically teach that the hydrophilic powder may be an alkylene oxide polymer.

The Examiner relies on the Arai reference for the disclosure of a hydrophilic powder being an alkylene oxide polymer, melamine resin or phenolic resin.

It is the Examiner's position that it would have been obvious to one of ordinary skill in the art to employ an alkylene oxide polymer as the hydrophilic powder because of its ready availability and economic advantage.

Applicants respectfully submit that the Examiner has not made a *prima facie* showing of obviousness. To establish a *prima facie* case of obviousness there must be (1) some suggestion or motivation within the reference or in the knowledge generally available to one of ordinary skill in the art to modify the reference; (2) a reasonable expectation of success; and (3) the prior art reference must teach or suggest all of the claimed limitations. *See Hodesh v Block Drug Co*, 786 F.2d 1136, 1153, n.5, 229 USPQ 182, 187, n.5 (Fed. Cir. 1986); *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 1438 (Fed. Cir. 1991); and *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974. Applicants respectfully traverse the rejection and submit that Suzuki et al does not teach or suggest all elements of the claims as discussed above and Arai et al does not remedy the deficiencies of Suzuki et al. Further, the problem to be solved by Suzuki et al is different from that of the claimed invention. As previously discussed, Suzuki et al relates to the production of a resin foam using an aqueous medium, whereas the present invention relates to preparing a stretched porous resin film by kneading a thermoplastic resin comprising a hydrophilic resin under particular conditions and then stretching. Thus, one of ordinary skill in the art would not have had a reasonable expectation of achieving the claimed invention based upon the combination of Suzuki et al and Arai et al.

Accordingly, Applicants respectfully request reversal of the rejection.

Claim 11 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Suzuki et al in view of Arai et al and further in view of Fujita et al.

The Examiner states that the combination of Suzuki et al and Arai fails to teach the alkylene oxide polymer is a reaction product of an alkylene oxide compound and a dicarboxylic

acid compound. The Examiner relies on Fujita et al for the teaching that an alkylene oxide polymer is a reaction product of an alkylene oxide compound and a dicarboxylic acid compound. It is the Examiner's position that it would have been obvious to one of ordinary skill in the art to employ an alkylene oxide polymer as a reaction product of an alkylene oxide compound and a dicarboxylic acid compound because this is a practical and economical method of preparing the alkylene oxide polymer.

Applicants respectfully traverse the rejection and submit that Suzuki et al and Arai et al do not teach or suggest all elements of the claimed invention as discussed above and Fujita et al does not remedy the deficiencies of the combination of Suzuki et al and Arai et al. Thus, one of ordinary skill in the art would not have had a reasonable expectation of achieving the claimed invention based upon the cited references, taken alone, or in combination.

Accordingly, Applicants respectfully request reversal of the rejection.

III. Response to the Examiner's Statements in the Advisory Action

In the Advisory Action mailed on November 20, 2003, The Examiner states that the amendment to recite the phrase "consisting essentially of" with respect to the composition used to produce the stretched porous resin film, only excludes additional components that do not materially affect the novel characteristics of the claimed invention and there is no declaration or evidence of record to demonstrate that the presence of a surface active agent, a polyhydric alcohol [and/or] a water-miscible organic solvent as disclosed by Suzuki et al would materially change the novel characteristics of the claimed invention.

In response, Applicants submit that the phrase "consistently essentially of" was included to exclude the aqueous medium used as a blowing agent in Suzuki et al. As previously stated, Suzuki et al describes the aqueous medium as "water" to which a surface active agent, water soluble polymer, polyhydric alcohol, water-miscible organic solvent, etc., ***may be added***. See col. 6, lines 22-31. It appears, however, that the Examiner is misinterpreting Suzuki et al as disclosing a surface active agent, polyhydric alcohol and water-miscible organic solvent as examples of suitable alternatives to water as an aqueous medium. Thus, based on this apparent misinterpretation of the disclosure of Suzuki et al, the Examiner suggests that these components disclosed by Suzuki et al are not excluded. However, an aqueous medium as taught by Suzuki et al would have detrimental effects on the claimed invention and therefore is excluded, whereas the components disclosed by Suzuki et al as additives for the disclosed aqueous medium are not necessarily excluded. Therefore, it is not required for Applicants' to provide declarative evidence that an additional component would affect the basic and novel characteristics of the claimed invention for all possible additives. Further, as is discussed a moisture content of 400 ppm or less is desirable and drying is carried out in advance in the Examples of the present specification, in order to control the content of moisture, which is sufficient to establish that the addition of an aqueous medium as described by Suzuki et al to "hold the aqueous medium stably" (see col. 3, lines 58-60) would affect the basic and novel characteristics of the claimed invention. This is further supported by the disclosure of Suzuki et al which indicates that the use of water as a blowing agent as in the disclosed invention was never thought of before because it

is a common practice in the art to use fillers for resins after water has been removed by drying. Col. 1, lines 56-59.

In the Advisory Action, the Examiner takes the position that claim 1 of the application is unspecific as to the nature of the hydrophilic thermoplastic resin and Suzuki teaches the amount of the hydrophilic thermoplastic resin within the claimed range. The Examiner further states that the polyethylene glycol listed in example 2 of Suzuki et al is not relied on as meeting the element of the claimed hydrophilic thermoplastic resin and therefore arguments related to the contact angle with water are invalid and irrelevant.

Applicants are not certain what part of the disclosure the Examiner is relying upon as a basis for the assertion that Suzuki et al discloses the claimed amount of the hydrophilic resin. Claim 1 recites "a thermoplastic resin comprising 5 to 100 parts by weight of a hydrophilic thermoplastic resin per 100 parts by weight of a non-hydrophilic thermoplastic resin". Therefore, the claims require both a hydrophilic and non-hydrophilic resin in certain amounts to meet the element of a thermoplastic resin in the claimed invention. None of the examples of Suzuki et al discloses both a hydrophilic and non-hydrophilic thermoplastic resin as the resin for the disclosed foamed resin, much less a hydrophilic and non-hydrophilic thermoplastic resin in the recited amounts. At col. 2, lines 19-45 of Suzuki et al, various thermoplastic resins are disclosed as suitable for the disclosed resin foam, which may be used singly or in combination. However, the reference does not specifically disclose "a thermoplastic resin comprising 5 to 100 parts by weight of a hydrophilic thermoplastic resin per 100 parts by weight of a non-hydrophilic thermoplastic resin" as recited in claim 1 of the present application. Therefore, Suzuki et al

cannot be said to anticipate the claimed invention within the meaning of 35 U.S.C. § 102, since all elements of the claimed invention are not specifically disclosed. Further, it cannot be said that the arguments relating to the amount of the hydrophilic resin and the effect on the contact angle with water are invalid or irrelevant, since the amount of the hydrophilic resin cannot be disregarded.

The Examiner states arguments that the solid powder of Suzuki et al does not substantially melt at the melting temperature of the kneaded thermoplastic resin or that Suzuki fails to disclose the kneading in an intermeshing twin screw extruder at the screw shear rate of 100 sec^{-1} or higher, are related to process limitations which do not show a structural difference of the claimed product over the prior art.

Applicants' submit that the process of kneading the composition in an intermeshing twin extruder at the specified shear rate are process elements that provide structural features to distinguish the claimed invention over the prior art. The process of kneading the composition in an intermeshing twin extruder at the recited shear rate are essential features of the process for obtaining the claimed stretched porous film having the recited liquid absorptivity. Applicants have pointed out that if the screw shear rate is less than 300^{-1} sec, then the hydrophilic resin will not be sufficiently dispersed and the desired liquid absorptivity would not be obtained. The liquid absorptivity is a recited physical or structural property of the claimed invention, which distinguishes over the prior art and which is obtained by the defined process. Therefore, the process elements should be given weight and considered as positive elements of the claimed invention that distinguish the invention over the prior art since a difference in physical properties

of a claimed product attributable to a process limitation may also serve to distinguish the claimed invention over a prior art product.

The Examiner further maintains that the liquid absorption property is an inherent property because the composition for obtaining the film of Suzuki is the same as in the presently claimed invention. The Examiner also asserts that the micrographs showing that differences in the expansion ratio would lead to differences in degree of stretching of the porous film are not found to be persuasive because the claims do not recite an expansion ratio.

Further, the Examiner's contention that the claimed liquid absorptivity property is an inherent feature of the foam of Suzuki et al is not reasonably based. The Examiner maintains the position that the liquid absorptivity property is inherent since the composition of Suzuki et al is the same as in the claimed invention. However, as previously pointed out, Suzuki et al does not disclose a thermoplastic resin comprising 5 to 100 parts by weight of a hydrophilic thermoplastic resin per 100 parts by weight of a non-hydrophilic thermoplastic resin as recited in the present claims. Therefore, it cannot be said that the composition disclosed by Suzuki et al is the same. Further the foam obtained by Suzuki et al is different from the stretched porous film of the claimed invention and the process for obtaining the disclosed foam is different from the process for obtaining the claimed stretched film. Even more specifically, Suzuki et al does not disclose the specified shear rate of 300^{-1} sec or higher, which directly attributes to a liquid absorptivity within the claimed range. Therefore, it cannot be said that it "necessarily flows" from the teachings in the prior art that the foam disclosed by Suzuki et al inherently possess the recited

liquid absorptivity property of the claimed invention. *See Ex Parte Levy*, 17 USPQ24 1461, 1464 (Bd. Pat. App. & Inter. 1990).

With respect to the Examiner's contention that the claims do not recite an expansion ratio and therefore the micrographs are not persuasive, Applicants submit that the micrographs and the arguments relating thereto were submitted to show that the foam of Suzuki et al is not stretched as is the film of the present invention. Therefore, since the present claims recite a "stretched" film, the evidence submitted is commensurate in scope with the claimed invention and is sufficient to distinguish the claimed invention over the prior art.

In view of the above, it is submitted that Suzuki et al does not disclose, teach or suggest all elements of the claims and therefore cannot be said to anticipate the claimed invention. Further sufficient evidence has been presented, in the specification or otherwise or render obvious the claimed invention.

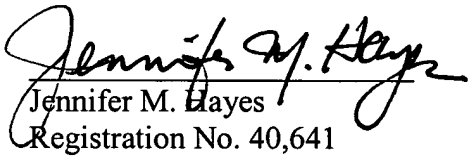
Accordingly, Applicants respectfully request reversal of the rejection.

IV. Conclusion

The present Brief on Appeal is being filed in triplicate. Unless a check is submitted herewith for the fee required under 37 C.F.R. §1.192(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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CUSTOMER NUMBER

Date: February 23, 2004 (February 21, 2004 is a Saturday)

APPENDIX

CLAIMS 1-6, 8-11 and 13-19 ON APPEAL:

1. (Currently Amended) A stretched porous resin film which is obtained from a compound prepared by kneading a composition consisting essentially of 30 to 100% by weight of a thermoplastic resin comprising 5 to 100 parts by weight of a hydrophilic thermoplastic resin per 100 parts by weight of a non-hydrophilic thermoplastic resin and 0 to 70% by weight of at least one of an inorganic fine powder and an organic fine powder in an intermeshing twin-screw extruder at a screw shear rate of 300 sec^{-1} or higher and which has a liquid absorbing capacity of 0.5 ml/m^2 or more as measured in accordance with the method specified in Japan TAPPI Standard No. 51-87.

2. (Original) The porous resin film according to claim 1, which has an average contact angle of 110° or less with water.

3. (Original) The porous resin film according to claim 2, wherein the difference between the maximum and the minimum contact angles with water is 30° or less.

4. (Original) The porous resin film according to claim 1, which has a porosity of 10% or more.

5. (Original) The porous resin film according to claim 4, which has 1×10^6 or more pores per m^2 on the surface thereof.

6. (Original) The porous resin film according to claim 1, wherein said inorganic or organic powder has an average particle size of 0.01 to 20 μm.

7. (Canceled)

8. (Currently Amended) The porous resin film according to claim 1, wherein said non-hydrophilic thermoplastic resin is a polyolefin resin.

9. (Currently Amended) The porous resin film according to claim 1, wherein said hydrophilic thermoplastic resin is capable of dissolving in water or absorbing 5 g/g or more of water in 30 minutes.

10. (Original) The porous resin film according to claim 9, wherein said hydrophilic thermoplastic resin is an alkylene oxide polymer.

11. (Original) The porous resin film according to claim 10, wherein said alkylene oxide polymer is a reaction product of an alkylene oxide compound and a dicarboxylic acid compound.

12. (canceled)

13. (Original) A laminate comprising a base layer having on at least one side thereof the porous resin film set forth in claim 1.

14. (Original) A liquid absorber comprising the porous resin film set forth in claim 1.

15. (Original) A liquid absorber comprising the laminate set forth in claim 13.

16. (Original) A recording medium comprising the porous resin film set forth in claim 1.

17. (Original) A recording medium comprising the laminate set forth in claim 13.

18. (Original) An ink jet recording medium comprising the porous resin film set forth in claim 1.

19. (Original) An ink jet recording medium comprising the laminate set forth in claim 13.

20. (Original) An ink jet recording medium comprising the porous resin film set forth in claim 1 and a colorant fixing layer provided on at least one side of said porous resin film.

21. (Original) An ink jet recording medium comprising the laminate set forth in claim 13 and a colorant fixing layer provided on the porous resin film provided on one side of said base layer or on both the porous films provided on both sides of said base layer.